

- 13 -

CLAIMS

1. Apparatus for confining impurities of a molten metal fed by means of a discharger and contained into an area (3) of a strip continuous casting mould delimited by the side surfaces of two counter-rotating casting rolls with horizontal axis (1a, 1b) and by two containment side plates (2a, 2b) positioned in contact with the rolls' bases, characterized in that it comprises:

- a discharger (4) having at least two first series of holes (4a, 4a') for the molten metal supply, each series being formed by at least a pair of holes respectively directed towards one of the opposed side surfaces of the two rolls (1a, 1b) and at least a second pair of holes (4b, 4b') for the molten metal supply, each hole of such second pair being directed towards the side plate nearest thereto, and said at least one second pair of holes (4b, 4b') being positioned at a greater depth with respect to said two first series of holes (4a, 4a');
- at least two pairs of barriers (5) present in one part of the area (3) comprised between the end of the plunger and the containment side plates (2a, 2b), forming the cross-sections of said barriers therebetween, lying on a same horizontal plane, an Y angle.

2. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to claim 1, wherein the holes of said first series of holes (4a, 4a') of the discharger (4) are positioned symmetrically with respect to the plunger centre and slanted on the horizontal plane by an X angle of at least 5° with respect to the perpendicular of the rolls' axis, so that each hole of each pair be directed in a divergent way towards the side plate nearest thereto.

3. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting

- 14 -

mould according to claim 2, wherein the holes of said first series of holes (4a, 4a') of the discharger (4) are slanted on the horizontal plane by an X angle optionally different for each pair of holes.

5 4. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 3, wherein said second pair of holes (4b, 4b') of the discharger (4) is positioned at a depth greater by at least 5 mm with
10 respect to any of the holes of the first two series of holes (4a, 4a').

 5. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 4, wherein the
15 holes of said second pair (4b, 4b') of the discharger (4) are slanted downwards by an angle comprised between 0° and 30°.

 6. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting
20 mould according to any of the claims 1 to 4, wherein the holes of said first series of holes (4a, 4a') of the discharger (4) are slanted upwards by an angle comprised between 0° and 45°.

 7. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting
25 mould according to any of the claims 1 to 6, wherein the holes of said first series of holes (4a, 4a') of the discharger (4) have round-shaped cross-section with a diameter comprised between 5 and 20mm.

30 8. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 6, wherein the holes of said first series of holes (4a, 4a') of the discharger (4) have cross-section with polygonal shape.

35 9. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 6, wherein the

- 15 -

holes of said first series of holes (4a, 4a') of the discharger (4) have partially round-shaped and partially polygonally-shaped cross-section.

5 10. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to claim 8 or 9, wherein the polygonal holes of said first series of holes (4a, 4a') of the discharger (4) are, at least partially, horizontal having a height lower than 20 mm.

10 11. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the preceding claims, wherein the ratio between the total area of said second pair of holes (4b, 4b') and the total area of said first series
15 of holes (4a, 4a') is comprised between 0.15 and 0.30.

12. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 11, wherein
20 said discharger (4) has, in the centre, at least an additional hole directed perpendicularly to the side surface of the rolls, positioned between said first series of holes (4a, 4a') of the discharger (4).

13. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting
25 mould according to any of the claims 1 to 12, wherein said Y angle is comprised between 5° and 45°.

14. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 13, wherein
30 each of said barriers (5) is constituted by one or more parts of refractory or ceramic material containing compounds selected from the group comprising Al_2O_3 , BN, ZrO_2 , SiC, SiN, SiO_2 , MgO and combinations thereof.

15. Apparatus for confining the impurities of a
35 molten metal contained into a strip continuous casting mould according to any of the claims 1 to 14, wherein said barriers (5) are slanted with respect to the

- 16 -

vertical.

16. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 15, wherein
5 said barriers (5) are reversibly fastened to a lid positioned in the mould above the molten metal bath or they are integrating part of the lid itself.

17. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting
10 mould according to any of the claims 1 to 15, wherein said barriers (5) are fastened to said discharger (4) or they belong to the discharger itself.

18. Apparatus for confining the impurities of a molten metal contained into a strip continuous casting
15 mould according to any of the claims 1 to 13, wherein said barriers (5) are formed by jets of inert or reducing gas directed from the top towards the surface of the molten metal.

19. Apparatus for confining the impurities of a
20 molten metal contained into a strip continuous casting mould according to claim 18, wherein said gas, before being blown on the molten metal surface, is preheated at a temperature greater than 100 C°.

20. Use of the apparatus for confining the
25 impurities of a molten metal contained into a strip continuous casting mould according to any of the claims 1 to 19, wherein said barriers (5) are positioned at least 10 mm away from the side surface of the rolls, at least 20 mm away from the side plates (2a, 2b) and not less
30 than 10 mm away from the discharger.

21. Use of the apparatus for confining the
impurities of a molten metal contained into a strip
continuous casting mould according to the preceding
claim, wherein said barriers (5) are partially dipped
35 into the molten metal for at least 5 mm.